everybody needs WATER

Everybody Needs WATER

THE CONSERVATION AND WISE USE OF WATER IS A KEY TO PROGRESS IN SOUTH CAROLINA

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

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Foreword

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In the past few years nearly every American has experienced some problems caused by either too much water when not needed, or too little water when more was needed.

Water affects the lives of all of us in many ways. It is essential in our everyday lives for drinking, cleansing, and sanitation.

Farmers know only too well the difficulties of providing water for irrigation, livestock, and other uses. A bountiful supply of water is essential in the development of a city. An ample amount of usable water is a dominant factor in the location of new industries.

For water we look to the fields, the forests, and the pastures which make up our watersheds. The way we manage these watersheds affects the abundance and purity of the water needed in increasing quantities by both rural and city people.

We are making encouraging progress toward the conservation and beneficial use of water. One of the recent developments in this field is the Watershed Protection and Flood Prevention Program. Under this program, works of improvement for flood prevention and the agricultural phases of conservation, and wise use and disposal of rainwater on watersheds, are being planned and carried out in cooperation with soil conservation districts.

But this effort comes none too soon. As water benefits all of us, we need to give more consideration to its conservation and use.

As our population increases, more demands are being made on our water resources. The effective use and conservation of water on farms will become increasingly important. Conflicts over water-use will have to be resolved.

When it rains, we forget about droughts; when it is dry, we forget about floods. But this should not be the case.

The habits of men and the forms of their social customs have been influenced more by their dependence upon water than upon the land from which they earn their bread.

The Holy Scripture many times points out the importance of man's relationship to water. Psalm 104: 10-4 is an example: "He sendeth the springs into the valleys, which run among the hills. They give drink to every beast of the field: the wild asses quench their thirst. By them shall the fowls of the heaven have their habitation, which sing among the branches. He watereth the hills from His chambers.....He

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causeth the grass to grow for the cattle, and herb for the service of man....."

Modern living imposes heavy demands on water. A person in the average modern home in the United States uses 60 gallons or more each day for household and lawn-watering purposes.

Electricity and pumps now bring water conveniently into our homes and industries. Thus it is easy to take water for granted.

Generations of men and women have grown up without experiencing the joy of satisfying their thirst from cool, sparkling, spring water.

But we dare not forget water. Each one of us is affected by the water problems now before us. Population of the United States has doubled since 1900, but per capita use of water has increased four fold mainly because of industrial and agricultural demands.

In the United States, investments in reservoirs, aqueducts, and other works to use or control water already total about 50 billion dollars--as against an outlay of 32 billion dollars to build our railways. During the next 50 years we can expect to see further investments of 75 to 100 billion dollars by private, state, and federal interests for the development and use of water.

Planning for the maximum development of our water resources for the longtime benefit of all our people can bind together the individual and the community, the farmer and the urbanite, as can few other conservation activities.

We are well supplied with water in South Carolina but we have a serious responsibility to be "Good Stewards" of this life-giving blessing.

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The Most Precious of All Commodities -- Clean Water

Mountain stream

Flowing well

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Water Is Essential to Life

The human body is more than 71 percent water.

Milk is 87 percent water.

To grow the grass which a steer must eat to produce a pound of beef requires 4,000 gallons of water.

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Uncontrolled Water

Water on the rampage tears away bare soil...

clogs stream channels...

floods low areas...

leaves sand on bottomland

Water can be friend or foe. Unless properly managed, it can do severe damage to land, bridges, buildings, and other property. Large volumes of water are lost during floods.

Nature provides South Carolina with a bountiful water supply. We can manage this water for beneficial use or we can let it cause damage and go to waste.

An inch of soil over an acre of land weighs about 150 tons. When we lose an inch of soil from many acres. great quantities of sediment are deposited on bottomland, in stream channels, reservoirs, and harbors.

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Uncontrolled water causes damage costing millions of dollars in South Carolina every year.

Crops on fertile bottom lands are destroyed by flooding.

Erosion and flooding cause an increase in highway maintenence costs.

Gullied land is lost for productive use. We cannot afford to lose any good land. It will be needed to produce food for our increasing population.

Soil eroded from farmers' fields creates a problem downstream. A recent contract for removing sediment from the Charleston harbor amounted to more than $1,500,000.

Destroys bridges...

damages roadsides...

fills lakes with sediment...

creates big gullies

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Conservation Practices Control Water

Terraces break long slopes

Grass waterways prevent gullies

The 45 soil conservation districts in South Carolina cover the entire state. More than 44,000 farmers cooperate with these districts. Each of them has a soil and water conservation plan for his farm. These plans are based on acre-by-acre soil surveys of their land.

These farmers apply many soil, water, woodland, and wildlife conservation practices.

These practices are designed to manage water and to get more of it to soak into the ground.

Strip cropping conserves soil and water

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Pastures, pines, and ponds are sometimes referred to as the "Three P's" of Conservation Farming. These are three of the important soil and water conservation practices.

On cropland, such practices as terraces, grass waterways, and strip cropping are needed.

Areas other than farm land also need protection from erosion. Roadsides, school grounds, airports, industrial sites, and similar areas, need conservation practices.

Pasture sod reduces runoff

Woodlands absorb water

Grass reduces roadside erosion

Ponds catch runoff water

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Watershed Protection

Planting pines on eroded land

Contour furrows on sloping land

Sod protects land, provides grazing

All water comes from a watershed. A watershed can be the area drained by a small creek or a large river. Our water supply starts on the land where the raindrops fall. What happens to it before it reaches you determines its quantity and quality. Farmers own most of the watershed lands. How they treat and manage these lands affects everybody. Conservation practices on the watershed help to bring about more uniform stream flow. Sediment from erosion affects the quality of water. Industrial waste and other forms of pollution may also affect its quality.

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Flood Prevention

Farmers, cities, industries, and the general public can work together as partners in a watershed protection and flood prevention project. All of them can benefit from such a program.

Farmers protect watershed lands with pines, strip cropping, pastures, and other conservation practices. By so doing they are protecting city reservoirs and industrial water supplies.

The Federal Government helps local groups with dams, channel improvement, and other flood prevention measures in approved watershed projects. This help is provided under Public Law 566. The program is administered by the Soil Conservation Service and other agencies help.

Provision can also be made through these projects for help with drainage and irrigation and to provide water for cities and industries; for wildlife and recreational benefits.

Dams hold back flood water....

release it through controlled outlet....

into improved stream channel

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Farm Ponds Conserve Water

Water impounded by dam

Dam protected by grass cover

Farmers cooperating with soil conservation districts in South Carolina have built more than 22,000 farm ponds. These ponds were designed by Soil Conservation Service technicians as a part of individual farm soil and water conservation plans.

These ponds are the best use for some areas of land. Also, by providing water where needed, they make it possible to use for pasture land best suited for this purpose.

They store thousands of acre-feet of water for livestock, irrigation, fish production, wildlife, recreation, and many other uses.

Ponds trap runoff water that might otherwise go to waste.

Dug pond in Coastal Plain

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Be Safe -- Water Can Be Dangerous

Provide life preservers before swimming

Innertubes are cheap safety insurance

Farm ponds are hazardous. Special care is needed to prevent drownings. Simple safety measures can save lives. Innertubes, life preservers, light-weight poles, throw ropes, or other life-saving devices, are essential safety items for farm ponds.

Children, especially, need to know the dangers of farm ponds. They should, in most cases, be accompanied by adults.

When boating, wear life preservers

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Surplus Water Can Be Managed

This cropland needs drainage

Laying tile to drain cropland

The removal of surplus water from cropland permits the farmer to plant his crops earlier. It also makes liming and fertilizing more effective.

Aerial view of drainage ditches

New drainage ditch on Farmers Home Administration borrower's farm.

About 11,000 miles of open and tile drains have been dug on farms of cooperators in the 45 soil conservation districts in South Carolina. This is about 40 percent as many miles as there are in primary and secondary roads in the South Carolina Highway System.

In recent years, pulp and paper companies and individual landowners have found it good business to manage water on their woodlands. They do this by digging ditches to remove surface water. They install gates so the ditches can be blocked when surface water has been drained off. Soil Conservation Service technicians often serve as consultants to paper companies in helping solve these problems.

Water Management on woodlands of West Virginia Pulp and Paper Company, Summerville, S. C.
This company has dug about 200 miles of ditches like this to remove surplus water from their woodlands.

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Water for Cities

Table Rock Reservoir

Greenville's New Reservoir

Cities require large quantities of pure water. As they grow, their water needs increase. Greenville is a good example. In 1920, Greenville used 1.5 million gallons of water a day. Now it uses 19.5 million gallons daily. For many years this city depended on Table Rock Reservoir with a capacity of 9.5 billion gallons for its water supply. Recently, a new reservoir with a capacity of 24.8 billion gallons was built.

The new lake covers more than 1,000 acres. It has an average depth of 80 feet. The land and the new dam cost $6 million. A 48-inch pipe carries water from the new reservoir to Greenville.

The watersheds are mountain land covered with trees. They protect the soil from eroding and keep sediment out of the lakes. This is important, for the useful life of many city reservoirs in South Carolina is 50 years or less, due to sedimentation.

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Water for Homes

We are using more water every year.

In the United States, we had twice as many people to use water in 1950 as we had in 1900. And our average per capita use of water was almost twice as much--1,100 gallons per day in 1950 as compared with 600 gallons in 1900.

Total water use in the United States increased four fold from 1900 to 1950. It is expected to double again by 1975. By then, about 1,800 gallons a day will be needed for every man, woman, and child.

The rapid spread of urban areas means an expansion of municipal water systems. In 1950, the nation's cities and towns used 14 billion gallons of water a day. Estimates of 1975 needs range from 20 to 34 billion gallons a day. In some areas, urban growth is already hampered by limited water supply.

During the drought of 1954,citizens of some towns in South Carolina were prohibited from watering grass or washing cars. This was prompted by water shortages which threatened the shut-down of local industry.

Water has many home uses

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Water for Industry

Seventeen-mile canal brings water to....

International Paper Company Plant

Industries flock to good water. Without water the wheels of most of our industry would stop. International Paper Company was threatened with such a stoppage in 1954. The Company constructed 17 miles of canals, dikes, and pipelines to bring water from the Pee Dee River to their paper mill at Georgetown. The pipeline is 4 feet in diameter. The canal crosses two main highways. It required 17 traffic bridges, plus a flume to carry water over a creek.

West Virginia Pulp and Paper Company at Charleston uses 47 million gallons of fresh water a day. This is almost three times the amount used by the City of Charleston.

The Celanese Plant at Rock Hill uses from 28 to 56 million gallons of water a day. Their peak use is more than twice the maximum daily water use in Columbia.

Our abundant water supply has helped to attract many industries to South Carolina. In the future, competition for water between industries, agriculture, cities, and other users, will increase.

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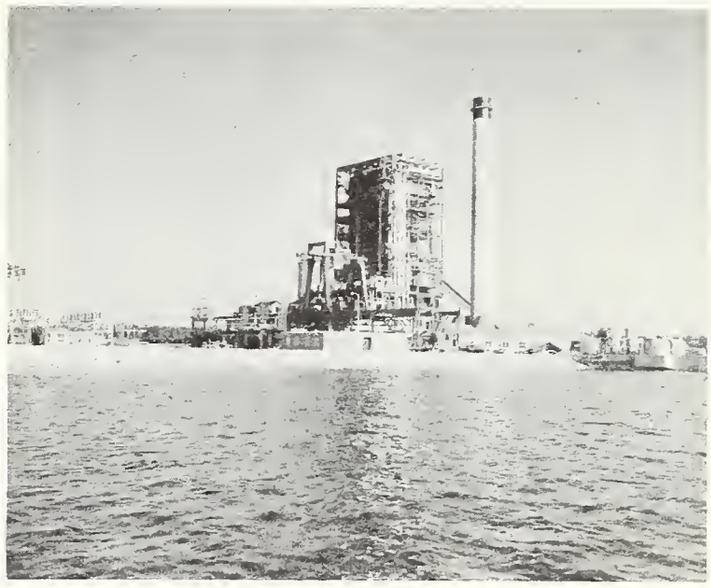
Water for Electric Power

Below - Water turns electric turbines....



is needed for steam generation, too.

Water is used in the generation of hydro-electric power. It is also essential in steam-operated electric plants. The cooling lake at the H. B. Robinson steam-operated plant of the Carolina Power and Light Company near Hartsville covers 2,300 acres. The lake is 7.5 miles long, has 25 miles of shoreline, and covers parts of Darlington and Chesterfield Counties. The dam is 5,000 feet long.

More and more electric-powered industries are moving into South Carolina to take advantage of our abundance of electricity, water, labor, skills, agricultural production, and other resources. We can therefore expect the demands on our available water supplies to increase tremendously.

This points up the need for watershed protection, flood prevention, and the conservation, management, and wise use of water.

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Water for Irrigation

Pumping irrigation water

Irrigating collards

Irrigating tobacco

Soil Conservation Service technicians, assisting soil conservation districts in South Carolina report about 70,000 acres irrigated.

These technicians also report 8,248 irrigation reservoirs with a storage capacity of 63,478 acre-feet.

Agricultural Conservation Program cost-sharing has helped farmers build many of the dams.

Farmers are building ponds, storing water, buying irrigation pumps and pipe to apply water where and when it is needed. When their crops need water, irrigation is the answer.

Conservation and wise use of water is just one part of "Conservation Farming". But it is a very vital part, and conservation and beneficial use of water is increasing rapidly on farms of our state.

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Irrigation requires large amounts of water. Ray Prince of Inman has an irrigation pump with a capacity of 500 gallons per minute. This pump is powered with CO-Op electricity.

Irrigated tomatoes

Prince uses this system to irrigate 75 acres of peaches. If operated continuously, it would use 700,000 gallons in 24 hours. This is about as much water as is used by the City of Chester on an average day.

Irrigated pastures

L. D. Holmes of Johnston has one irrigation pump which puts out 1,300 gallons of water per minute. If operated continuously, this would amount to about twice as much water as is used by the City of Chester in a 24-hour period.

Irrigated corn

More than 6,000 acres of crops have been irrigated in Edgefield County at times. SCS technicians have helped design 68 irrigation systems in that County.

Water for Livestock

There is nothing like a drink of cool, clean water.

Water is one of the most important requirements of livestock and poultry. To use land best suited for pasture, we must have water where needed. Farm ponds catch runoff water and provide a dependable supply in pastures. This permits proper land use and rotation grazing. Large amounts of water are needed for milk and meat production and for other livestock uses on the farm. Without farm ponds the present large-scale development of pastures and livestock in South Carolina would not have been possible.

Ponds and pastures go together.

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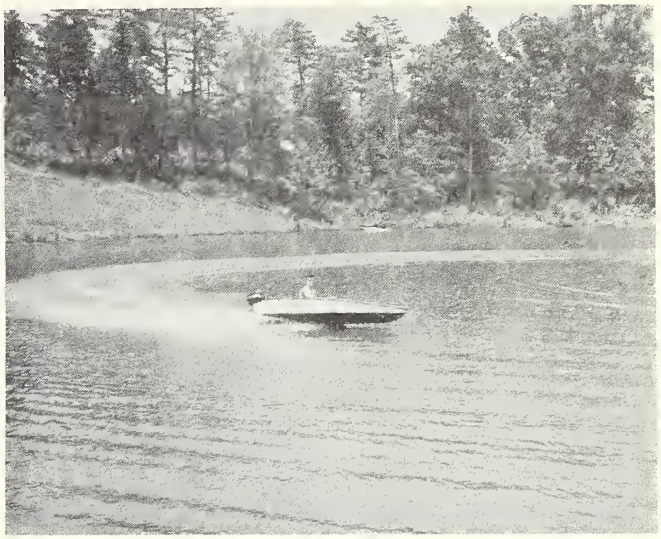
Water for Recreation



Boating on flood-retarding lake

Below - Picnic beside a pond

As population increases, as cities become more crowded, and as the work-week becomes shorter, recreation becomes more and more important. Water is the key element in many kinds of recreation. The sale of fishing tackle, boats, motors, skis, and other equipment for water recreation has increased tremendously in recent years in South Carolina.

Swimming at
Table Rock State Park

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Water for Wildlife

Pumping water into ...

corn and millet field for ducks

Water is a key factor in attracting and keeping many kinds of wildlife. Some farmers plant millet or other feed crops in lowland fields. When the crops mature, they flood the fields to provide water and feed for ducks and geese.

Ducks on farm pond in Anderson County

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Water for Fish Production

Below - Receiving small fish for farm pond

Fishing is fun

A well-stocked, properly fertilized and managed pond will produce from 200 to 300 pounds of fish per acre per year. This compares well with the amount of beef produced on an acre of pasture. So, covering the land with water is good land use, too.

A good day's catch

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The Work of Soil Conservation Districts

Each of South Carolina's 45 soil conservation districts has a conservation program to fit its local problems. It uses federal, state, and local help to put its program into effect on individual farms and watersheds.

These districts sponsor watershed protection and flood prevention projects and plan and carry out other water conservation activities.

The first Soil Conservation District in South Carolina was chartered on September 3, 1937. Since that time, these local units of government have proved to be effective instruments for both individual and community action to deal with local soil and water problems. Each district is directed by a board of farmers. These soil conservation district supervisors decide upon a district-wide program and plan of action.

Districts arrange for various kinds of assistance from a number of public agencies and private organizations. This is done through formal working agreements in some cases.

Districts make these facilities available through soil and water conservation farm plans with individual landowners to help them conserve their soil, water, woodland, and wildlife resources.

Soil conservation districts have always treated soil and water as related resources. With the growing importance of water they are putting more emphasis on its conservation, development, and wise use.

What the Soil Conservation Service Does

The Soil Conservation Service is the technical arm of action in soil conservation districts. It brings together in one staff trained conservationists needed to solve land and water problems. The staff includes soil conservationists; soil scientists; economists; agricultural, civil, irrigation, hydraulic, drainage, and cartographic engineers; and specialists in woodland, biology, plant materials, geology, and sedimentation.

The Soil Conservation Service gives on-the-farm technical assistance to farmers in planning, applying, and maintaining conservation farming systems.

This is done by:

1. Making an acre-by-acre soil survey of each farm.
2. Preparing a soil and land capability map based on this survey.
3. Helping the landowner prepare a conservation plan. The plan is based on consideration of various alternatives in the use and treatment of the land within its capabilities as shown by the map and in keeping with the farmer's decisions.
4. Assisting in the application of practices called for in the plan. This includes engineering surveys for contouring and strip cropping, and designing and supervising construction of drainage and water management systems, irrigation systems, farm ponds, terraces, and waterways.
5. Giving technical and financial assistance to local groups with watershed protection and flood prevention projects.

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Other Agencies Help with Water Conservation

The Agricultural Conservation Program provides cost-sharing for certain water conservation practices.

County Agents and Teachers of Vocational Agriculture help in the field of soil and water conservation education.

The S. C. Wildlife Resources Department and the U. S. Fish and Wildlife Service are concerned with water conservation related to wildlife.

The S. C. Commission of Forestry provides tree seedlings and helps on woodland management problems.

The Farmers Home Administration makes soil and water conservation loans as may be appropriate.

The S. C. Water Pollution Control Authority is responsible for water pollution abatement in the State.

The U. S. Geological Survey provides valuable statistical information on water resources.

The U. S. Forest Service and other agencies also cooperate in their respective fields of interest.

You Can Help Too

Water is vital to you, wherever you live. If your community has a water problem--shortage, flood, poor drainage, or pollution--you can help in solving the problem. This can be done by working together with your neighbors and by getting the assistance available from the various agencies. You may need a watershed protection and flood prevention project in the area where you live.

Find out about the quality, quantity, and dependability of the water supply in your own community--water for homes, for business, industry, agriculture, for recreation and wildlife.

Then contact your Soil Conservation District, the Soil Conservation Service, or other agencies for help that may be needed.

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